SECTION IV

The ARC Distressed County Designation

The Appalachian Regional Commission (ARC) has used the distressed county designation for almost twenty years to identify counties with the most structurally disadvantaged economies. Up to 30 percent of ARC's Area Development Funds are targeted at distressed counties through allocation of ARC grants to distressed counties, requiring only a 20 percent match from the state and/or local government, which is lower than the state/local match required from non-distressed counties. From 1983, the inception of the distressed counties program, through 1999 the ARC has provided $266 million dollars in single-county grants to distressed counties. This sum constituted 42 percent of such single-county grants awarded across Appalachia (Wood and Bischak, 2000).

The ARC has modified the variables and the formulae used to determine distressed status several times during the past two decades, adopting its present form in FY 1995. The current criteria for distressed status compare the poverty, unemployment, and per capita market income of Appalachian counties with national averages. Three-year rolling averages are utilized for unemployment and per capita market income to moderate the effect of annual variation caused by short-term economic fluctuations. Currently, a county qualifies as distressed if its poverty rate and its unemployment rate are greater than or equal to 150 percent of the corresponding national average and its per capita market income is less than or equal to 2/3 of the national average. A county with a poverty rate of 200 percent or more of the national average need only meet the criteria on one of the other two measures in order to be designated distressed. The ARC also designates transitional, competitive, and attainment counties, although these categories will not be addressed in this report.

Each year the ARC updates the distressed status of counties based on more current information on unemployment and per capita market income. However, reliable county-level poverty rates have, until recently, only been available from the decennial census at the beginning of each decade. In the years between decennial censuses, poverty rates for individual counties change, and the distribution of poverty within the region shifts. Using the poverty rates from the most

recent census ignores the subsequent changes in poverty conditions as the decade proceeds. Post-censal updates of poverty paralleling the updated estimates for unemployment and per capita market income could improve the distressed county designation. The Census Bureau's *Small Area Income and Poverty Estimates* (abbreviated as SAIPE, which will also be referred to as "SAIP estimates" to focus on the numerical estimates themselves rather than the overall statistical estimates program) program offers a potential solution to this problem. The Census Bureau's SAIPE program initially published county-level poverty estimates for 1993 (and 1989 for comparison with 1990 census poverty estimates) with updates scheduled on a biennial basis during the remainder of the decade. In this section of the report, we incorporate the SAIPE post-censal poverty estimates for 1989, 1993, and 1995 into the ARC distressed status designation. We evaluate the influence of post-censal estimates of poverty on the traditional distressed county classification, which uses only the estimates of poverty from the most recent census, during both the 1980s and the early 1990s.

Distressed Counties in 1980 and 1990

To provide a context for the introduction of the SAIPE into the distressed county designation, we first examine distressed counties in 1980 and 1990, using the poverty estimates from the respective censuses (Appendix D Distressed Status Designation Methodology). Of the 399 Appalachian counties, the number designated as distressed increased between 1980 and 1990, from 71 counties in 1980 to 105 in 1990, nearly a 50 percent increase (Table 4.1a).[7] This increase reversed a two-decade decline in the number of distressed counties. Between 1960 and 1980 the number of distressed counties declined from 214 to only 78, according to designations made using a slightly modified distress formula, with single year income and unemployment estimates rather than three-year averages (Wood and Bischak 2000). During the 1970s alone, the number of distressed counties declined by more than 50 percent from 161.

[77] The number of distressed counties in 1990 does not correspond to the number of counties officially designated distressed by ARC because distress levels were frozen during the 1988-1992 period awaiting the release of 1990 census poverty data (Wood and Bischak 2000). The distressed designation uses three year averages of unemployment and per capita market income. Numbers in Table 4.1a are based on a formula for defining distressed counties that incorporates poverty estimates from the last census, not the Census Bureau's post-censal SAIPE estimates.

In 1980, Kentucky contained the largest number of distressed counties among Appalachian states at 32, with Tennessee a distant second at 16. This represented 65 percent of the ARC counties in Kentucky and 32 percent of the Tennessee ARC counties. The already high number of distressed counties in Kentucky increased by five, making 75 percent of Kentucky's ARC counties distressed. During the 1980s West Virginia experienced an increase of 20 distressed counties or nearly triple its 1980 number moving it into second place, with 27 distressed counties, behind Kentucky. While only 13 percent of West Virginia ARC counties were distressed in 1980, 50 percent were in 1990. Over 60 percent of the distressed counties in 1990 were located in just two states, Kentucky (37) and West Virginia (27). Ohio also had more than 2.5 times as many distressed counties in 1990 than in 1980 with 13, or 24 percent of the ARC counties in Ohio. Mississippi gained seven distressed counties during the decade, more than doubling the number of distressed counties, and moving the percent of ARC counties distressed in that state from 29 percent to 62 percent. Only Tennessee lost a substantial number of distressed counties between 1980 and 1990, seven or just under one half of its distressed counties, moving it from the state with the second most distressed counties in 1980 to fourth in 1990.

Table 4.1a:

ARC Distressed Counties by State, 1980 and 1990

	ARC	1980 Distressed		1990 Distressed		Change	
State	**Counties**	**#**	**%**	**#**	**%**	**#**	**%**
Alabama	35	3	8.6	7	20.0	4	133
Georgia	35	1	2.9	0	0.0	-1	-100
Kentucky	49	32	65.3	37	75.5	5	16
Maryland	3	0	0.0	0	0.0	0	0
Mississippi	21	6	28.6	13	61.9	7	117
New York	14	0	0.0	0	0.0	0	0
North Carolina	29	3	10.3	2	6.9	-1	-33
Ohio	29	2	6.9	7	24.1	5	250
Pennsylvania	52	0	0.0	0	0.0	0	0
South Carolina	6	0	0.0	0	0.0	0	0
Tennessee	50	16	32.0	9	18.0	-7	-44
Virginia	21	1	4.8	3	14.3	2	200
West Virginia	55	7	12.7	27	49.1	20	286
TOTAL	**399**	**71**	**17.8**	**105**	**26.3**	**34**	**48**

Given the distribution of distressed counties across states in 1990, it is not surprising that distressed counties were also geographically clustered (Figure 4.1). A large, contiguous group of distressed counties encompassed nearly all the Appalachian counties in Kentucky then extended several counties deep into West Virginia along the boundary of those two states. This cluster also extended into a line of counties stretching northeast in Ohio and to a lesser degree into a pocket of four distressed counties in Tennessee and two in North Carolina. A second large cluster barely separated from the first by a single row of counties located just to its northeast, was comprised of 20 counties in West Virginia. Principally Mississippi but also Alabama shared two smaller agglomerations of distressed counties. In 1990 there were only six isolated distressed counties that did not at least touch a corner of another distressed county.

The change in the geographic distribution of distressed counties between 1980 and 1990 not only reflected an increase in the number and extent of distressed counties but also a substantial shift northward and somewhat eastward in the bulk of distressed counties. This is especially evident in the two large 1990 clusters of distressed counties in central Appalachia with the Kentucky group growing, moving out of Tennessee and into Ohio and West Virginia and the second West Virginia group emerging. The cluster of four contiguous distressed counties in West Virginia that existed in 1980 grew to about 5 times that size in 1990 (Figure 4.2).

The large cluster centered in Kentucky in 1990 was also considerably larger than in 1980, having grown significantly into West Virginia and Ohio. In 1980 a much larger portion of this cluster was located in Tennessee, extending nearly to its southern border. In 1980, there was also a somewhat more continuous line of distressed counties stretched along the Tennessee/North Carolina border than in 1990. In contrast, the cluster of distressed counties along the southern tier of Appalachia in Mississippi and Alabama was much smaller in 1980, containing only five counties, compared to 10 in 1990. The cluster along the northern border of Mississippi, extending into Alabama did not exist at all in 1980, with only two scattered distressed counties, one distressed county in Mississippi and another in Alabama.

Throughout both periods, 1980 and 1990, 282 counties remained non-distressed, while 59 counties remained distressed (Table 4.1b). Of the 12 counties that transitioned from distressed to non-distressed status during the 1980s, the majority of them (seven) did so solely as a result of changes in poverty. An additional two resulted from joint changes in poverty and unemployment

Figure 4.1:
ARC Distressed Counties, 1990

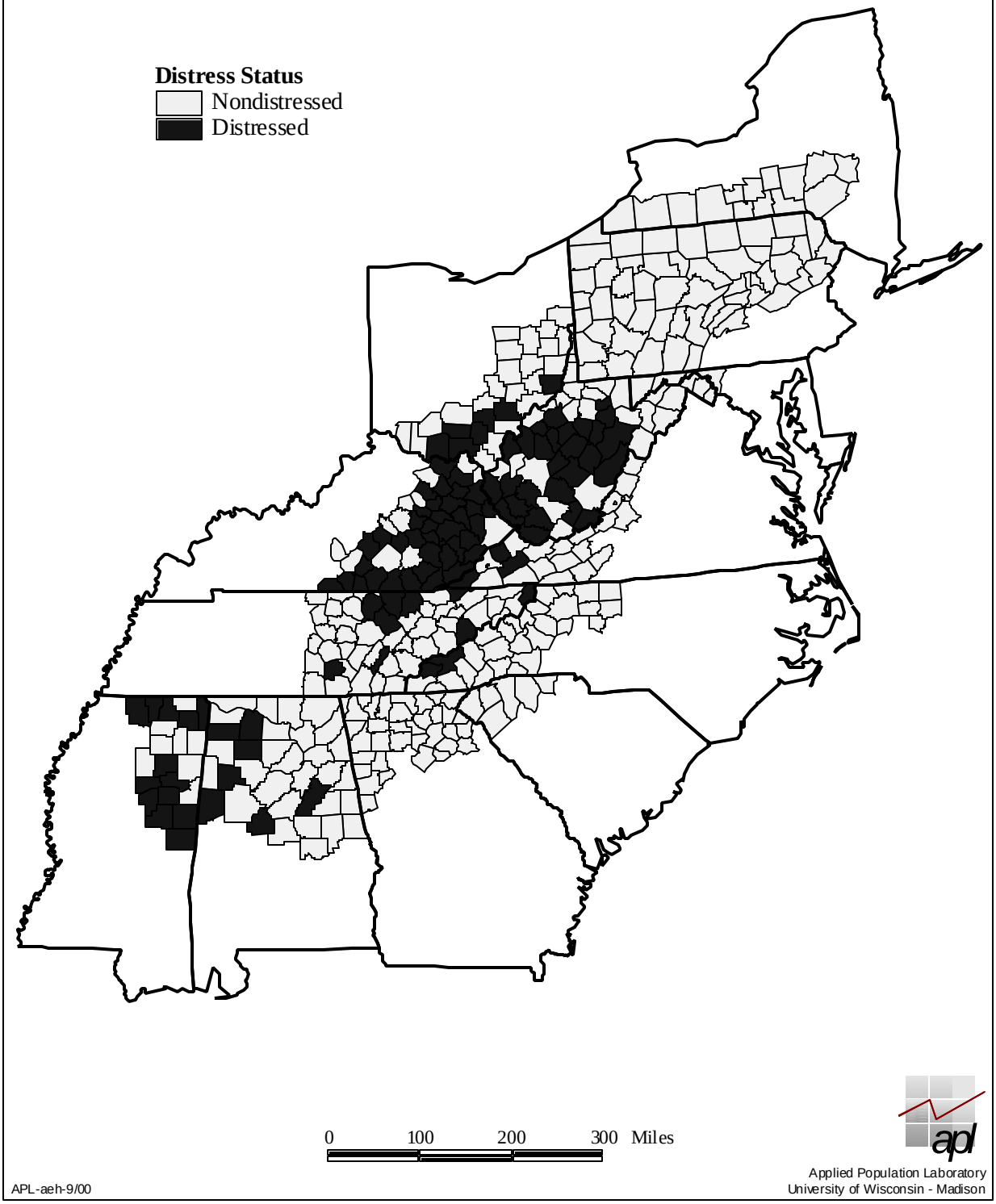
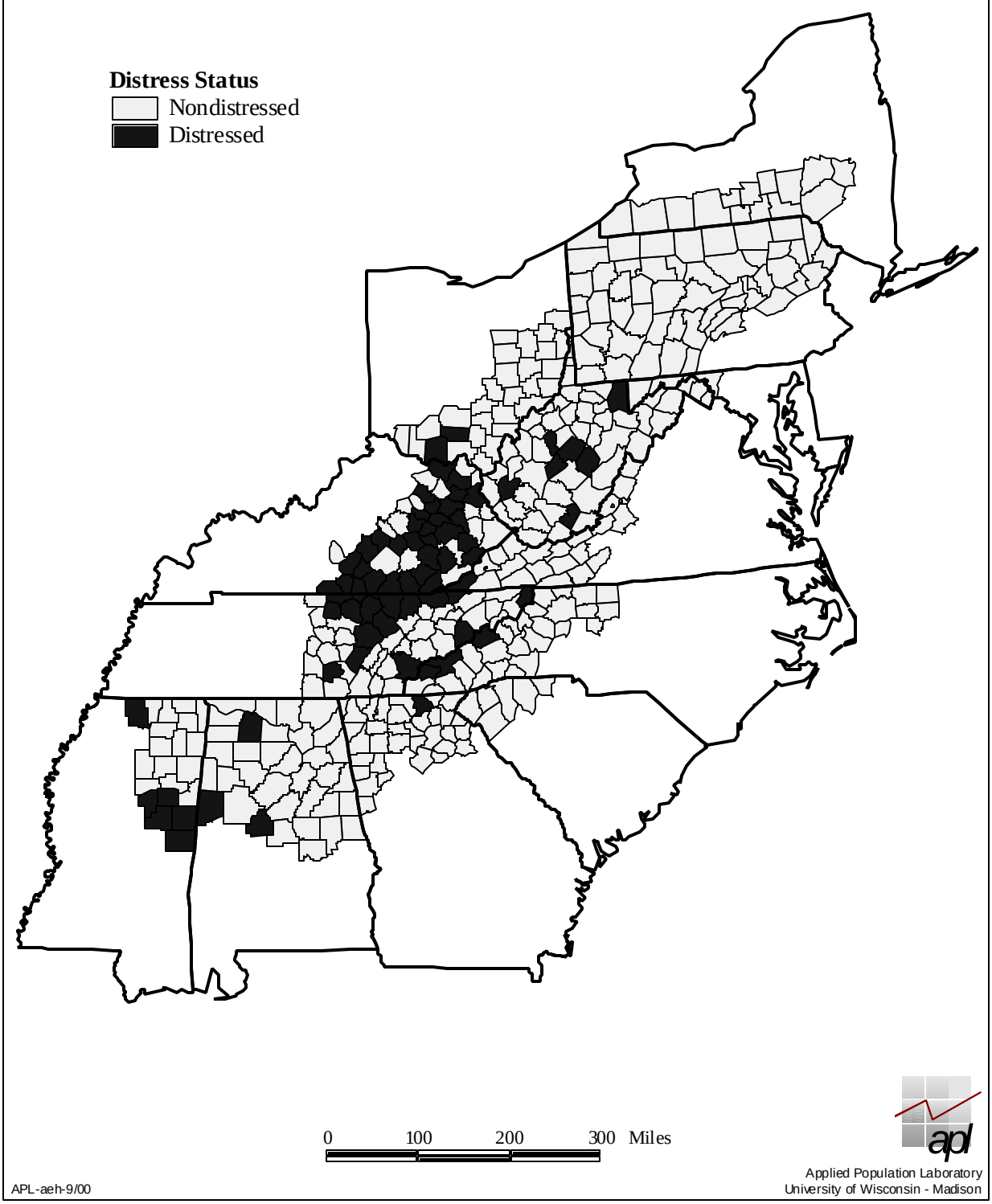


Figure 4.2:
ARC Distressed Counties, 1980



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and one other resulted from joint changes in poverty and income. The remaining two transitions out of distressed status resulted from changes in unemployment. Therefore, changing relative poverty levels were a factor in 10 of the 12 transitions out of distressed status during the 1980s. Poverty did not contribute quite as greatly to the much larger number of counties (46) that became distressed in the 1980s. The largest group of counties transitioning into distressed status experienced changes in both income and poverty (10), followed by eight counties with changes in unemployment and income, seven counties with changes in unemployment alone, seven counties with changes in poverty alone, and six counties with changes in all three indicators of distress.

Table 4.1b:
ARC Distressed Status Changes by Cause of Change

	Number
No Status Change	**341**
Non-Distressed	282
Distressed	59
Distressed to Nondistressed	**12**
Unemployment	2
Poverty and Unemployment	2
Poverty and Income	1
Poverty	7
Nondistressed to Distressed	**46**
Unemployment	7
Income	3
Unemployment and Income	8
Poverty and Unemployment	5
Poverty and Income	10
Poverty, Unemployment, and Income	6
Poverty	7

The Accuracy of Distressed Status at the End of the 1980s

As noted, a significant problem with the determination of distressed status during the course of a decade is the diminishing relevance of the Census poverty rates as the decade progresses. Substitution of the SAIP estimates in the determination process may more accurately identify distressed counties, especially near the end of each decade. This section examines the change in 1990 distressed status when the SAIP estimates are substituted for the census-based estimate of poverty during the 1980s. We compare the accuracy of "old" census poverty estimates (1980

census) with SAIP estimates (for 1989 poverty), when each is used to predict 1990 distressed status as measured by the 1990 census. We calculated four versions of distressed status for 1990 using four different measures of poverty for calendar year 1989. The per capita market income and unemployment figures are the same in all four versions of distressed status. The first distressed status designation is identical to the 1990 distressed status used in the comparison of 1980 and 1990 above and includes poverty rates for 1989 as measured by 1990 census. The second uses poverty rates from the 1980 census, which previously would have been the only available measure of poverty at the end of a decade prior to the release of data from the new census. Further, using the SAIPE we calculate two sets of distressed status designations for each year. As in the analysis of the 1990s below, we incorporate the actual SAIP point estimate (which will be referred to as the estimate or the point estimate) in one distressed status designation and we incorporate the 95 percent confidence interval upper bound SAIP estimate (which will be referred to as the upper bound or UB in the tables) to create a fourth measure of distressed status. Table 4.2 compares the accuracy of the 1980 census and the two SAIPE measures in replicating 1990 distressed status as determined by the 1990 census.

Of the 294 non-distressed counties in Appalachia in 1990 (i.e., as determined by the 1990 Census), both the SAIP point estimate and the 1980 census correctly categorized 281 of those counties (Table 4.2). The 1980 census incorrectly classified 12 of those counties as distressed, while both the 1980 census and the SAIP point estimate incorrectly categorized one of those counties. As such, the SAIP point estimate correctly categorized 99.7 percent of the non-distressed counties while the 1980 census did so for 95.6 percent of those counties. The SAIPE upper bound incorrectly classified a greater number of counties as distressed than did the other two measures; a total of 22 counties for an accuracy of 92.5 percent. The upper bound estimate would be expected to classify a greater number of nondistressed counties as distressed since it is the upper estimate of poverty at a 95 percent confidence level. All three measures correctly categorized a very high percentage of the non-distressed counties, over 90 percent.

For the 105 counties that were distressed in 1990, the 1980 census categorized 28 of those counties as non-distressed. Although, the SAIP point estimate only incorrectly categorized 19 of these counties, this was an accuracy level of only 80 percent, while the 1980 census accuracy was lower at 73.3 percent. The SAIP upper bound distressed categorization was much more accurate than the other two in categorizing distressed counties with only three counties incorrectly classified and an accuracy of 97.1 percent.

Table 4.2:

Comparison of 1980 Census and SAIPE in Determining 1990 Distressed Status

	Point Estimate	Upper Bound Estimate
Non-Distressed	**294**	**294**
1980 Census and SAIPE Correct	281	267
Only 1980 Census Incorrect	12	5
Only SAIPE Incorrect	0	14
Both Incorrect	1	8
SAIPE (% Correct)	**99.7%**	**92.5%**
1980 Census (% Correct)	**95.6%**	**95.6%**
Distressed	**105**	**105**
1980 Census and SAIPE Correct	71	77
Only 1980 Census Incorrect	13	25
Only SAIPE Incorrect	6	0
Both Incorrect	15	3
SAIPE (% Correct)	**80.0%**	**97.1%**
1980 Census (% Correct)	**73.3%**	**73.3%**

Neither the 1980 census nor the 1989 SAIP point estimate adequately anticipated the overall expansion in distressed counties in terms of their northward shift (Figure 4.3). A sizeable portion of the distressed counties in the West Virginia cluster were classified as non-distressed by both the 1980 census and the SAIP point estimate. The 1980 census misclassified an additional five of those counties. Both indicators also largely missed the increase in the number of distressed counties in Ohio but this was true of the 1980 census to a greater extent. At the other end of that geographic cluster of distressed counties, the 1980 census did not accurately predict the improving status of counties in Tennessee and counties along the Tennessee/North Carolina border. Nor did these two indicators accurately anticipate the expansion of distressed counties in the border region of Mississippi and Alabama, although in this case the SAIPE incorrectly categorized more of the counties. However, the SAIPE upper bound does correctly categorize those distressed counties (Figure 4.4). The upper bound indicator also more accurately predicted the expansion of distressed counties in Ohio and West Virginia. However, it did misclassify a number of non-distressed counties as distressed, although those generally were not clustered but were scattered throughout Appalachia.

Figure 4.3:
Comparison of 1980 Census and 1990 SAIPE to 1990 Census

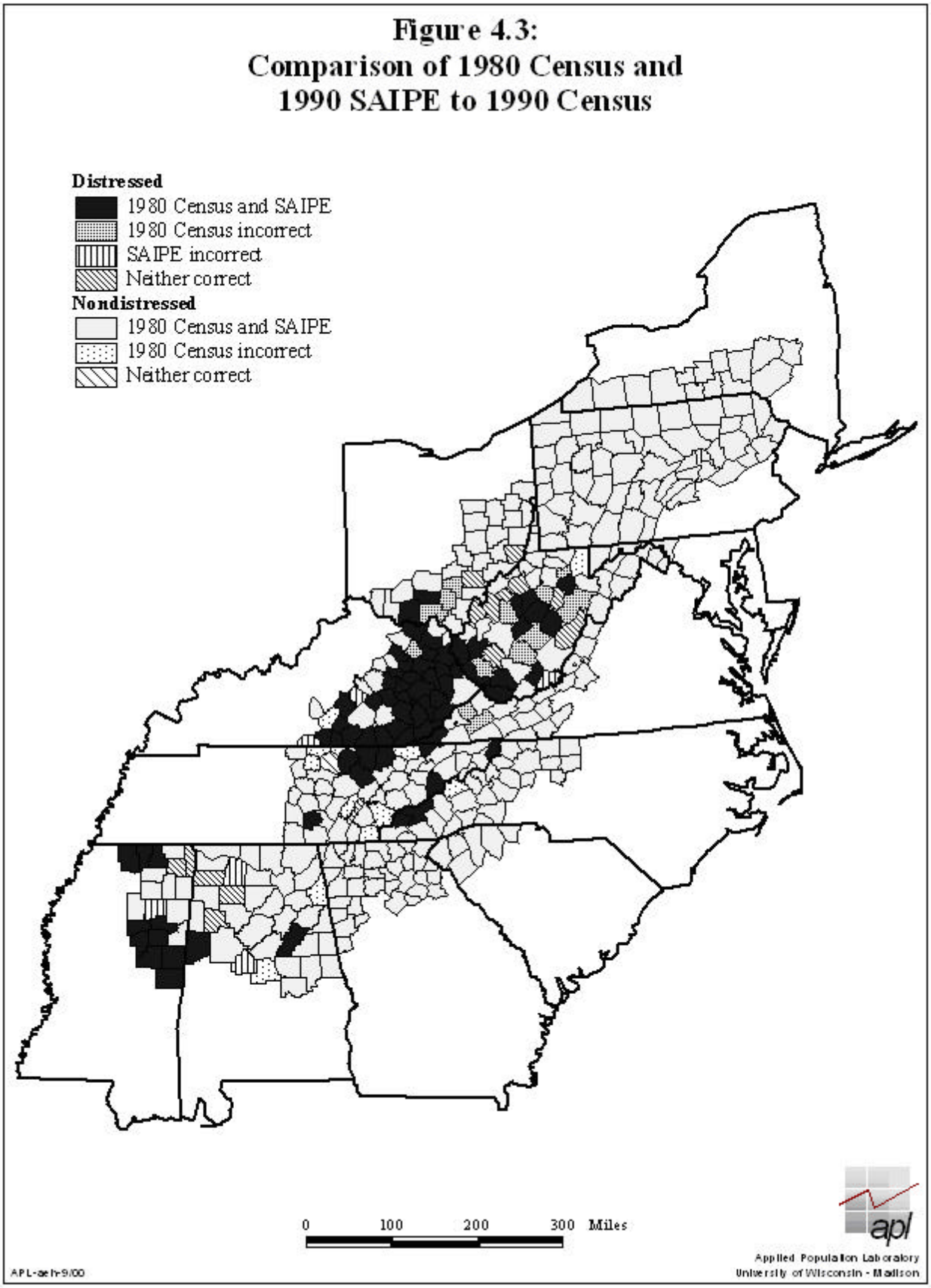

Figure 4.4:
Comparison of 1980 Census and 1990 SAIPE Upper Bound to 1990 Census